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10/761,923	01/20/2004	Mehran Mokhtari	B-4801NP 621673-0	2158

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EXAMINER	
NGUYEN, LEON VIET Q	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/761,923	MOKHTARI ET AL.	
	Examiner	Art Unit	
	LEON-VIET Q. NGUYEN	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-85* is/are pending in the application.

4a) Of the above claim(s) *3,7-11,14-17,19-22,25,29-33,36-39,41-44,47,51-55,58-61,63,73-77 and 82-85.* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6,18,23,24,26-28,40,45,46,48-50,62 and 66-81* is/are rejected.

7)☒ Claim(s) *12,13,34,35,56,57 and 65* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to communication filed on 6/11/08. Claims 1, 2, 4-6, 12, 18, 23, 24, 26-28, 34, 40, 45, 46, 48-50, 56, 62 and 64-72 are pending on this application.

Response to Arguments

2. Applicant's arguments, see Remarks, filed 6/11/08, with respect to the rejection(s) of claim(s) 1, 2, 4-6, 18, 23, 24, 26-28, 40, 45, 46, 48-50, 56, 62, 64, and 66 under 35 USC 103(a) have been fully considered but they are not persuasive.

3. Applicant's arguments, see Remarks, filed 6/11/08, with respect to claims 12, 34, 56 have been fully considered and are persuasive. The rejection of claims have been withdrawn.

4. Applicant's arguments, see Remarks, filed 6/11/08, with respect to the rejection(s) of claim(s), 65, 67-72 and 78-81 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However the argument is moot in view of the new grounds of rejection.

Response to Remarks

Regarding claim 1, applicant requests that examiner identify the base device and the component being substituted with the device of a secondary reference (Remarks page 4 first and second paragraphs).

As stated in the previous office action, Gerdes teaches the reception of a modulated (col. 2 lines 19-26) and gated signal (col.2 lines 39-46) which is demodulated (col. 2 lines 29-39). It is well known in one of ordinary skill in the art that modulation occurs in a transmitter portion of a system while demodulation occurs in a receiver portion of a system. Therefore it would be necessary for Gerdes to have a transmitter and receiver. The previous office action proposes that the gating by an analog switch in the system of Gerdes (col. 2 lines 39-46 of Gerdes) be replaced by the digital gating device 22 as taught by Toman (col. 2 lines 24-29 of Toman). Gerdes is directed to modulating carrier signals (col. 1 lines 14-16 of Gerdes) and Toman is directed to modulation of carrier frequencies (col. 1 lines 17-19 of Toman). Both are in the same field of endeavor.

Also regarding claim 1, applicant asserts that the present application is directed to OOKing and both Gerdes and Toman teach away from OOking (Remarks third paragraph).

Although neither Gerdes nor Toman explicitly teach OOking modulation, OOKing is well known in the art as a type of modulation that represents digital data. Gerdes teaches that it is possible to transmit digital pulses along a communications medium

such as an optical medium (col. 1 lines 27-29) which would be modulated first. Toman also teaches the transmission of digital samples (abstract). It would be obvious to use one of the many types of well known modulation schemes for transmission including OOK. Furthermore, nowhere in the claim is OOKing claimed. Therefore any type of modulation would read on the claimed limitations.

Further regarding claim 1, applicant asserts that Gerdes does not teach the counting of cycles as claimed in claim 1 (Remarks page 5 first paragraph).

Examiner disagrees.

As stated in the previous office action, Gerdes teaches that the carrier signal contains information representative of logic states (Previous OA page 4 third paragraph). Furthermore the information is encoded every half cycle (col. 1 lines 58-62 of Gerdes). It would be necessary for the receiver to count every half cycle to retrieve the information in the carrier signal during that half cycle.

Regarding claim 2, applicant asserts Toman does not teach a receiver (Remarks page 5 fourth paragraph).

Examiner respectfully disagrees.

Although Toman is directed to a transmitter, it would be necessary for a receiver to receive those transmitted signals unless a person were to merely transmit signals with no intention of them being received. In that case, the examiner would see no use for the transmitter. Toman does suggest that the modulated signal would be recongized

by a receiver (abstract). Therefore the system of Toman would be able to operate in free space, contrary to applicant's assertion.

Regarding claim 64, applicant asserts that White does not describe photodetecting (Remarks page 8 second paragraph). Applicant also asserts that White provides an average value whereas the applicant's invention requires the counting of received cycles (Remarks page 8 second paragraph).

Examiner agrees that White does not teach photodetection. However the limitation is not claimed in claim 64. In fact it was crossed out in the submission of the claims dated 12/13/07 on page 64. Therefore the argument is moot. Secondly, claim 64 does not have the limitation counting received cycles. It is acknowledged that the counting received cycles is claimed in the base claim 45 however White was not relied upon to teach those particular limitations.

Regarding claims 67 and 78, applicant asserts that Luhman does not teach gating at least one carrier signal (Remarks page 10 first paragraph) and that the limitation requires gating according to only one bit pattern (Remarks page 10 first paragraph).

Examiner agrees that the buffer 120 in fig. 9, as stated in the previous office action, is not a gating circuit. However amplifier 124 in fig. 9 is interpreted to be a gating circuit. Amplifier 124 either outputs an amplified signal or does not provide an output signal according to data inputs from a buffer (¶0050). The amplifier performs this

function in response to bits 00-11 (¶0050), which are interpreted to be digital bits. Although applicant claims that the limitation requires gating according to only one bit pattern, it is uncertain where that is stated in claims 67 and 78. Claim 67 clearly states that gating is performed "according to each digital bit in said synchronized stream of said digital bits." This is interpreted to mean that there are several digital bits. Nonetheless, 00, 01, 10, and 11 are considered single bits (¶0050).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4, 18, 23, 24, 26, 40, 45, 46, 48, 62 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerdes et al (US4989219) in view of Toman (US4037173).

Re claim 1, Gerdes teaches a communication system for transmitting and receiving digital data comprising:

a transmitter (col. 2 lines 52-57, it is well known in the art that modulation occurs in the transmitting portion of a system. Therefore it would be necessary to have a transmitter to transmit the modulated signals) transmitting one or more gated carrier waves gated (col. 2 lines 39-46) by said digital data (col. 2 lines 57-63) and

a receiver (col. 2 lines 64-66, it is well known in the art that demodulation occurs in the receiving section of a system. Therefore it would be necessary to have a receiver to receiver the modulated signals) detecting at least one gated carrier wave of the one or more gated carrier waves (it would be obvious to one of ordinary skill in the art that a carrier wave be detected before demodulation),

wherein said receiver determines a state of said digital data by counting cycles of the at least one gated carrier wave of the one or more gated carrier waves (col. 1 lines 58-62, it would be obvious to one of ordinary skill in the art that a receiver would demodulate the carrier signal to obtain information representative of the logic states. This information would be obtained by counting every half cycle).

Gerdes fails to teach wherein the carrier waves are digitally gated. However Toman teaches digitally gating a radio frequency energy or signal (col. 2 lines 24-29), whish is interpreted to be the carrier wave.

Therefore taking the combined teachings of Gerdes and Toman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the digital gating of Toman into the system of Gerdes. The motivation to combine Gerdes and Toman would be to provide an improved and economical apparatus for generating two different modulated carriers (col. 1 lines 43-46).

Re claim 2, the modified invention of Gerdes teaches a communication system wherein at least one digitally gated carrier wave (col. 2 lines 24-29 of Toman) has a frequency in the less than microwave, microwave (col. 4 lines 54-57 of Toman), or millimeter wave spectrum and is radiated in free space from said transmitter to said receiver (it would be obvious to radiate the signal in free space since an aircraft flies in free space).

Re claim 4, the modified invention of Gerdes teaches a communication system where said transmitter comprises:

a carrier wave generator (sinusoidal 2f carrier in fig. 2 of Gerdes, it would be necessary to have a generator to generate the sinusoidal carrier wave); and

a digital gating device (col. 2 lines 24-29 of Toman) coupled to said carrier wave generator (col. 2 lines 39-46 of Gerdes, it would be obvious that the wave generator and gating device would be coupled together since the carrier signal is gated) and controlled by said digital data (col. 2 lines 18-24 and lines 29-36 of Toman, the digital data stored in the registers),

said digital gating device gating a carrier wave from said carrier wave generator on and off according to a state of the digital data (abstract of Toman, col. 1 line 67 – col. 2 lines 6 of Toman).

Re claim 18, the modified invention of Gerdes teaches a communication system wherein said transmitter selectably generates said at least one digitally gated carrier wave at selectable radio frequencies (col. 4 lines 49-61 of Gerdes).

Re claim 23, the claimed limitations recited have been analyzed and rejected with respect to claim 1. It would be obvious and necessary to have a method of using the apparatus as claimed in claim 1.

Re claim 24, the claimed limitations recited have been analyzed and rejected with respect to claim 2.

Re claim 26, the claimed limitations recited have been analyzed and rejected with respect to claim 4.

Re claim 40, the claimed limitations recited have been analyzed and rejected with respect to claim 18.

Re claim 45, the claimed limitations recited have been analyzed and rejected with respect to claim 1.

Re claim 46, the claimed limitations recited have been analyzed and rejected with respect to claim 2.

Re claim 48, the claimed limitations recited have been analyzed and rejected with respect to claim 4.

Re claim 62, the claimed limitations recited have been analyzed and rejected with respect to claim 18.

Re claim 66, the modified invention of Gerdes teaches an apparatus wherein means for transmitting comprises means for selecting one or more selectable radio frequencies for said at least one gated carrier wave based on a desired coding (col. 1 lines 59-66 of Toman, the various modulation levels for each of said at least two radio carriers. Coding and modulation are interpreted to be the same).

3. Claims 5, 27, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerdes et al (US4989219) and Toman (US4037173) in view of Yousefi et al (US6957078).

Re claim 5, the modified invention of Gerdes fails to teach a communication system wherein said transmitter further comprises a power amplifier disposed at said output of said digital gating device and coupled to at least one transmit antenna.

However Yousefi teaches a communication system wherein said transmitter further comprises a power amplifier (abstract, TWTA 210 in fig. 2) disposed at said output of said digital gating device (modulator 206 in fig. 2 which is further described in fig. 3, col. 4 lines 1-2) and coupled to at least one transmit antenna (antennas 112 and 114 in fig. 2).

Therefore taking the modified teachings of Gerdes and Toman with Yousefi as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power amplifier of Yousefi into the system of Gerdes and Toman. The motivation to combine Yousefi, Gerdes and Toman would be to provide more efficient use of downlink, satellite power, and satellite processing (col. 6 lines 8-15). Furthermore, it is well known in the art that amplifiers are used to increase the signal strength.

Re claim 27, the claimed limitations recited have been analyzed and rejected with respect to claim 5.

Re claim 49, the claimed limitations recited have been analyzed and rejected with respect to claim 5.

4. Claims 6, 28, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gerdes et al (US4989219), Toman (US4037173) and Yousefi et al (US6957078) in view of Staszewski et al (US20020186782).

Re claim 6, the modified invention of Gerdes fails to teach a communication system wherein said power amplifier is operated in a non-linear region of operation.

However Staszewski teaches a communication system wherein said power amplifier is operated in a non-linear region of operation (¶0041).

Therefore taking the modified teachings of Gerdes, Toman, and Yousefi with Staszewski as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Staszewski into the system of Gerdes, Yousefi and Toman. The motivation to combine Staszewski, Yousefi, Gerdes and Toman would be to provide more amplitude control (¶0041).

Re claim 28, the claimed limitations recited have been analyzed and rejected with respect to claim 6.

Re claim 50, the claimed limitations recited have been analyzed and rejected with respect to claim 6.

5. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gerdes et al (US4989219) and Toman (US4037173) in view White et al (US20010005145).

Re claim 64, the modified invention of Gerdes fails to teach an apparatus wherein said at least one gated carrier wave is generated at selectable optical and/or selectable radio frequencies and said means for receiving comprises:

means for receiving a radiated electrical signal, said means for receiving a radiated electrical signal said at least one gated carrier wave at radio frequencies.

However White teaches means for receiving a radiated electrical signal (¶0019 and ¶0047, the electromagnetic radiation receiver) , said means for receiving a radiated electrical signal said at least carrier wave at radio frequencies (¶0047, the electrical signal is modulated onto a RF carrier wave).

Therefore taking the modified teachings of Gerdes and Toman with White as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of White into the system of Gerdes and Toman. The motivation to combine White, Gerdes and Toman would be to improved testability of a circuit (¶0011).

6. Claims 67 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luhman et al (US20040223557) in view of Ainsworth (US5245630).

Re claim 67, Luhman teaches a digital transmitter for transmitting digital data comprising:

a carrier generator providing one or more carrier signals at selected frequencies (¶0031, although not explicitly taught it would be necessary to have a generator to generate a carrier wave);

a data edge synchronizer coupled to said serial stream of digital bits and receiving at least one carrier signal of said one or more carrier signals (¶0031-¶0032, the clock signal is interpreted to represent the cycles of the carrier wave. It would be obvious to have a synchronizer to perform the synchorization), said data edge synchronizer producing a synchronized stream of digital bits (¶0031, the data bit stream is synchronized to the clock signal), wherein at least one edge of each digital bit in said synchronized stream of digital bits is synchronized to a specified part of each cycle within said at least one carrier signal (¶0031-¶0032, the data and clock signals are synchronized to each other); and

a gating circuit (amplifier 124 in fig. 9 acts as a gate, ¶0050) gating at least one carrier signal of said one or more carrier signals according to each digital bit in said synchronized stream of digital bits (¶0050, amplifier 124 outputs or does not output a signal according to bits 00-11).

Luhman fails to teach a serializer coupled to said digital data and producing a serial stream of digital bits. However Ainsworth teaches a serializer coupled to said digital data and producing a serial stream of digital bits (col. 2 lines 19-27).

Therefore taking the combined teachings of Luhman and Ainsworth as a whole, it would have been obvious to one of ordinary skill in the art at the time the was made to incorporate the serializer of Ainsworth into the transmitter of Luhman. The motivation to combine Ainsworth and Luhman would be provide serial data which is well known to travel over further distances than parallel data.

Re claim 78, the claimed limitations recited have been analyzed and rejected with respect to claim 67.

7. Claims 68, 69, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Cheng (US4789838).

Re claim 68, the modified invention of Luhman fails to teach a digital transmitter wherein said data edge synchronizer comprises:

one or more wide-band limiting amplifiers coupled to said serial stream of digital bits; and

a flip-flop coupled to an output of said one or more wide-band limiting amplifiers.

However Cheng teaches one or more wide-band limiting amplifiers (wideband amplifier 10 in fig. 1) and a flip-flop coupled to an output of said one or more wide-band limiting amplifiers (flip/flop 18 in fig. 1).

Therefore taking the modified teachings of Luhman and Ainsworth with Cheng as a whole, it would be obvious to one of ordinary skill in the art at the time the invention was made to incorporate the features of Cheng into the transmitter of Luhman and Ainsworth. The motivation to combine Cheng, Ainsworth, and Luhman would be to prevent multi-triggering (col. 2 lines 22-25).

Re claim 69, the modified invention of Luhman teaches a digital transmitter wherein said flip-flop comprises a latch or D flip-flop (D flip/flop 18 in fig. 1 of Cheng).

Re claim 79, the claimed limitations recited have been analyzed and rejected with respect to claims 68 and 69.

8. Claims 70-72, 80 and 81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luhman et al (US20040223557) and Ainsworth (US5245630) in view of Toman (US4037173).

Re claim 70, the modified invention of Luhman fails to teach a digital transmitter wherein said gating circuit gates said at least one carrier signal on and off.

However Toman teaches a gating circuit wherein the gating circuit gates at least one carrier signal on and off (abstract).

Therefore taking the modified teachings of Luhman and Ainsworth with Toman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the digital gating of Toman into the transmitter of Luhman and Ainsworth. The motivation to combine Luhman, Ainsworth and Toman would be to provide an improved and economical apparatus for generating two different modulated carriers (col. 1 lines 43-46).

Re claim 71, the modified invention of Luhman fails to teach a digital transmitter wherein said gating circuit selects one carrier signal of said one or more carrier signals and gates the selected carrier signal.

However Toman teaches wherein said gating circuit selects one carrier signal of said one or more carrier signals and gates the selected carrier signal (abstract, col. 2 lines 24-42, it would be obvious to gate the carrier that is on).

Therefore taking the modified teachings of Luhman and Ainsworth with Toman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the digital gating of Toman into the transmitter of Luhman and Ainsworth. The motivation to combine Luhman, Ainsworth and Toman

would be to provide an improved and economical apparatus for generating two different modulated carriers (col. 1 lines 43-46).

Re claim 72, the modified invention of Luhman teaches a digital transmitter wherein said gating circuit (buffer 120 in fig. 9 of Luhman acts as a gate, ¶0049 of Luhman) gates said at least one carrier signal according to each digital bit in said synchronized stream of digital bits (¶0045 and ¶0049 of Luhman, the FIFO buffer gates the synchronized output from flip-flops 116 and 118 in fig. 9 of Luhman). The modified invention fails to teach where the circuit gates according to a specified code sequence.

However Toman teaches wherein said gating circuit gates according to a specified code sequence (col. 2 lines 24-32, the sample point value is interpreted to be a code sequence).

Therefore taking the modified teachings of Luhman and Ainsworth with Toman as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the digital gating of Toman into the transmitter of Luhman and Ainsworth. The motivation to combine Luhman, Ainsworth and Toman would be to provide an improved and economical apparatus for generating two different modulated carriers (col. 1 lines 43-46).

Re claim 80, the claimed limitations recited have been analyzed and rejected with respect to claim 71.

Re claim 81, the claimed limitations recited have been analyzed and rejected with respect to claim 72.

Allowable Subject Matter

9. Claims 12, 13, 34, 35, 56, 57, and 65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/
Examiner, Art Unit 2611

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611